

Workshop Series 2: Where to Start and How to Evolve Your SMS and Getting Started with Organizational Safety Performance Indicators

On October 13th and 14th, a group of industry professionals, in partnership with MITRE, convened automated driving system developers in a set of virtual workshops as a follow-on to an [initial forum](#) held in April 2021 on the topic of Safety Management Systems (SMS) and their application to the innovative and fast-paced automated driving domain. These two interactive workshops addressed a sub-set of opportunities highlighted by participants at the April event for further exploration and discussion. The first two-hour workshop discussed ways that an organization can start down the path of SMS, including expanding upon safety approaches already in use. The second workshop discussed safety performance indicators, or SPIs, and the benefits and challenges of adopting and tracking organizational safety metrics. The intent of this executive summary is to share key takeaways generated from these workshops as well as provide resources to further support the automated driving industry in enhancing organizational safety through SMS.

WHERE TO START AND HOW TO EVOLVE YOUR SMS

In the first two-hour session, held on October 13th, the industry professionals participated in a panel discussion representing five unique companies in the ADS space: from large automotive manufacturers to smaller tech-focused autonomy companies, and from domains such as automated trucking, shared mobility, personal transportation, and last-mile delivery developers. These panelists shared their unique experiences in implementing safety management at their organizations, including lessons learned as they started down the path. How did they begin their safety implementations? What struggles did they face? Some examples brought up by the panel members from their own experiences include: start with a gap analysis to identify what you might be missing; set expectations with leadership early on that SMS won't be "finished" in a few weeks; formalize your process methodically and using business processes you probably already have, such as voluntary safety reporting; and formalize roles early on, possibly through a formal Safety Review Board, to create accountability and responsibility for safety products. The overall message: don't try to implement everything immediately! Organizations likely have components of SMS already active; leverage these to start and evolve your SMS.

For the second hour of the event, attendees broke out into small groups to discuss starting an SMS program around the context of a real-world organizational safety failure event: the Deepwater Horizon oil spill. Using a case study of this event, the breakout groups discussed what large failures like this reveal about implementing SMS. Key points include: start at the top and demonstrate leadership buy-in to safety, engage from the bottom to the top of the organization to remove disconnects, and empower

employees to speak up about safety. The lively discussions provided a venue for experts from different organizations to compare notes on SMS challenges and share solutions that they may have used to address hard challenges.

GETTING STARTED WITH ORGANIZATIONAL SAFETY PERFORMANCE INDICATORS

In the second two-hour session, held on October 14th, the group explored organizational safety performance indicators (SPIs)—metrics that can be used to track the performance and health of safety management at the organizational level. This session did not discuss component- or system-level safety metrics, which are also important for SMS implementation. After an introduction and stage setting by Aurora, MITRE presented considerations on measuring organizational performance. Some key highlights include: metrics can provide insight into performance, but do not always give a clear answer. They must be considered carefully and in context. Sometimes, decision makers may not have the context around a metric, so take the time to present and interpret results. A mix of leading and lagging SPIs are important to preempt hazards while measuring effectiveness. Finally, when you see variability in a metric, work to understand the “why” of the anomaly. Following this presentation, MITRE presented an [SPI Resource Guide](#), which separates organizational SPIs into sub-categories and highlights “starter sets” to consider when implementing an SMS. This resource guide includes common pitfalls when measuring items in a category, common data sources for these metrics, and the reason why measurement is important when considering a particular SMS component. The attendees then engaged anonymously with the guide using the online tool MURAL, highlighting metric areas where they feel strong, areas where they’re looking to improve, and areas where they plan on next tracking SPIs.

In second hour of this session, attendees broke out into small groups and discussed how measurement is both important and challenging when dealing with organizational safety challenges. Using a generic organization safety failure scenario, groups discussed how SPIs would be leveraged to improve safety within this organizational context. Key points include: metrics are likely different between organizations, but tracking change is important; a “Just Culture” takes time, especially where the working environment is fluid; encourage deeper dives into metrics and understand the “why” of a change; finally, predictable process is an important method of encouraging and building employee trust and reliable SPIs.

SUMMARY

In summary, these two interactive workshops focused on providing lively interactions between industry colleagues regarding two key topics in SMS for the ADS industry—where to start and how to evolve your SMS process, and how to measure effectiveness and identify gaps using SPIs. The workshop committee presented resources for use by attendees to take back to their organizations and facilitated conversation through real-world examples of their own experiences starting up SMS. Future workshops will continue to address areas of interest within the community surrounding SMS implementation. On behalf of all of our event co-hosts and collaborators, MITRE thanks you for attending these workshops and looks forward to future collaboration.